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natural selection as a transforming factor, but acknowledges its preserving and intensifying power. This is the only concession that can be made to the theory of natural selection as long as the results of Eimer's investigations have not been refuted by facts, not, as heretofore, by words. Till then, I believe, one cannot deny to Eimer's work the appreciation contained in Minot's introductory sentences: "If Professor Eimer's claims are correct, his researches mark one of the great epochs of biological discovery."

I wish to state that this is merely a preliminary exposition of Eimer's views, intended for rectifying the erroneous judgment expressed by Minot. Eimer's work on organic evolution (Macmillan, 1889) gives a detailed account of his theoretical views and of the facts on which they are based. His work on Butterflies, which was criticised by Minot, serves to furnish further corroboration of the theory advanced in the above work on evolution. In his lecture at Leyden he has also given a complete exposition of his ideas in their relation to the theory of selection and of Weismannism; against the latter Eimer takes a most decided stand (see 'Extract from Comte Rendu des Séances du 3^{me} Congrès international de Zoologie, Leyde, 16-21 Sept., 1895). This lecture includes the programme of Eimer's most recent exposition of 'Orthogenesis' embodied in a work that is just about to appear.

COUNTESS DR. M. VON LINDEN.

ZOOLOGICAL INSTITUTE, HALLE.

THE Countess von Linden's article presents the arguments in favor of Eimer's theory. A reply seems unnecessary and others will judge of the value of the theory. Eimer's earlier papers I knew; whether I understood them or not I cannot decide. All of Eimer's evidence is essentially that he asserts that of a group of living species a

certain form or certain forms are ancestral types. If one denies that assertion Eimer cannot *prove* that it is correct, but unless he *proves* it his deductions remain hypotheses. The reader is asked to consider whether Countess von Linden offers proof that a certain species in any given case is the ancestral race.

For the sake of a fair discussion I am glad that the preceding communication from Professor Eimer's assistant appears in SCIENCE.

CHARLES S. MINOT.

PROGRESS OF PROFESSOR KITASATO'S INSTITUTE FOR INFECTIOUS DISEASES AT TOKIO.*

AMONG the changes in the general condition of Japan, due to the introduction of Western civilization, one of the most noteworthy is the entire revolution in the system of medicine; the old Chino-Japanese school has been superseded by the scientific system of the West, and the striking feature of the new medicine in this empire is the ascendancy of the bacteriological element. The center of this movement is seated at the 'Institute for Infectious Diseases,' directed by Dr. Kitasato.

To Mr. Fukusawa belongs the credit of having initiated the introduction of this branch of medical science into this country by building, at his own expense, a laboratory for Dr. Kitasato, upon the latter's return from Germany in 1892. I do not mean to ignore what has been done at the University and elsewhere; I only emphasize the great impetus that the study of the micro-organisms has enjoyed since the establishment of the above mentioned laboratory. Subsequently the Institute became connected with the 'Sanitary Society of Japan.' The ensuing year the Imperial Diet

* This article was prepared at the request of the Editors. Dr. Nakagawa is a graduate of Princeton University.

granted the sum of 20,000 yens (\$10,000) for the building and equipment of the Institute, and also yearly the subsidy of 15,000 yens, which was to be continued for three years. At the expiration of the term the same subsidy has been renewed for the same number of years. Thus the Institute has no relation with the Imperial University of Tokio and is directly under the patronage of the Minister of the Interior.

The work of the Institute is divided between the scientific and clinical departments; the scientific department is subdivided into the laboratory for original researches and the didactic branch for the postgraduate course in practical bacteriology.

(a) *Laboratories for Original Researches.*

It is here that Dr. Kitasato continues his investigations, and I take this opportunity to recapitulate some of the more important reports issued from his laboratory.

(1) *Tsutsugamushi*.—This malady, which is endemic in certain parts of this country, presenting the clinical feature resembling that of the typho-malarial fever, has been ascertained to be the pathological condition due to the parasitic invasion of the red blood corpuscles analogous to that which obtains in malaria. Moreover, the plasmodia of *tsutsugamushi* is described as being morphologically very nearly related to that found in malaria, but differing from the latter parasites in this important respect: viz., that the *tsutsugamushi* parasites are refractory to all the staining procedure now in use.

(2) *Bacillus Pestis*.—The discovery of the plague bacilli is too well known to need mentioning in this connection were it not for the fact that it seems to be utterly unknown to the world that the bacilli claimed to be the specific germ of the plague by Dr. Yersin is absolutely different from that described by Dr. Kitasato. Dr. Kitasato's bacilli are almost exactly like those of chicken

cholera (in shape), i. e., each bacillus presents the appearance of a pair of diplococci, and is, as a rule, considerably smaller than Dr. Yersin's bacillus. Kitasato's bacilli can be stained according to Gram's methode, while the other is decolorized by the regular procedure. Kitasato's bacillus is surrounded by a distinct capsule which is wanting with Yersin's. Moreover, Kitasato's bacilli are motile, but Yersin's bacilli are not. There are thus at present two distinct bacilli held to be the ætiological factor of the disease in question. It is to be hoped that the members of the commission sent out to Bombay will help to clear up the confusion.

(3) *Anti-diphtheritic serum*.—The preparation of the serum has been carried on in this Institute previous and up to the opening of the Imperial Government Serum Institute, in June, 1896. I might mention in this connection that Dr. Kitasato is the chief advisor of the Serum Institute.

(4) *Anti-cholera serum*.—I have had occasion elsewhere to make a brief report of Kitasato's work on this subject (*Brit. Med. Jour.*, July, 1896). I shall only mention here that the result was in so far encouraging that it justifies making further trials of this remedy in the future epidemics. Neither shall I enter into detail concerning the experimental part of the work in which Dr. Kitasato seeks to prove the anti-toxic property of the cholera-serum; suffice it to say that the conclusion he has reached is at variance with that of the Berlin school.

(5) *Leprosy*.—Dr. Kitasato has been engaged in the most thoroughgoing investigation into the treatment of leprosy. It is reported that he is in possession of the remedy which goes under the name of 'Leprine,' though I am unable to say that its preparation is, in any way, analogous to that of tuberculine, as its name seems to suggest. It is expected that Dr. Kitasato will favor the world by publishing his full report in the near future.

(6) Investigations concerning the typhoid and erysipelas serums, as well as various other researches in all the fields of micro-biology, are being pursued by the Professor himself, as also by the assistants under his supervision. There are 6 assistants and nearly 10 'extra-ordentliche' assistants.

The studio for micro-photography has recently been built and is equipped with Zeiss's complete apparatus.

The library, though in its infancy, contains most of the works on infectious diseases, bacteriology and hygiene, and is supplied with the medical periodicals in the English, French, German, Italian and Japanese languages. I take this opportunity of acknowledging the receipt of the following official publications from America: U. S. Department of Agriculture, Bureau of Animal Industry; Bulletins U. S. Treasury Department, Marine Hospital Service, Health Reports, etc.; City of Brooklyn, Department of Health, Annual Report. We should be glad to receive more of the American publications.

(b) *Practical Course in Bacteriology.*

The utility of the knowledge of micro-organisms being admitted, it was deemed desirable to give a practical course of bacteriology for the benefits of the licentiates in medicine. The first course was given in March, 1894. The course is of three months' duration and is conducted by Professor Kitasato, who gives a series of lectures on the pathogenic bacteria. The assistants take their turn and serve as demonstrators. The laboratory for instruction accommodates 50 students and is provided with all necessary appliances. Over 200 physicians have gone through the course. It is with great pleasure that we mention in this connection that the American naval surgeon and an English naval surgeon have availed themselves of the facilities of the Institute and have pursued their investigations for a considerable length of time.

(II.) THE CLINICAL DEPARTMENT.

The wards in all are capable of holding 50 patients. The admission is limited to cases of contagious diseases (except cholera and smallpox). Diphtheria, tuberculosis, typhoid, tetanus and relapsing fever are the principal maladies on the list. I may mention in this connection that 180 cases of leprosy have been treated in the out-patient department with the injection of 'Leprine,' and 4 cases of complete recovery, beside several cases of improvement, have been reported. The diphtheria statistics show a mortality of 9.44%.

A. NAKAGAWA.

INSTITUTE FOR INFECTIOUS DISEASES, TOKIO.

NINTH ANNUAL MEETING OF THE ASSOCIATION OF ECONOMIC ENTOMOLOGISTS,
DETROIT, MICH., AUG. 12-13, 1897.

THE Association met in room 212, Central High School building, immediately following the adjournment of Section F. Thirteen active members were present, together with many visitors, prominent among the latter being Dr. C. A. Dohrn, Professor E. B. Poulton and Dr. C. S. Minot. The attendance for the four sessions averaged about 35. The address of the retiring President, Professor F. M. Webster, Wooster, Ohio, treated of 'The Present and the Future of Applied Economic Entomology in the United States,' and contained, among other very interesting features, an admirable tribute to the value of the systematist and a somewhat caustic criticism of the 'species maker,' helpful suggestions for the experiment station worker, and a very frank discussion of the unfortunate results which attend the attempts sometimes made to combine politics and science.

The following were elected to active membership: G. B. King, Lawrence, Mass.; Gerald McCarthy, Raleigh, N. C.; E. P. Felt, Albany, N. Y.; A. F. Burgess, Mal-